

# NORTHWEST WATER TREATMENT FACILITY

October 15, 2018

DBo Selection Summary

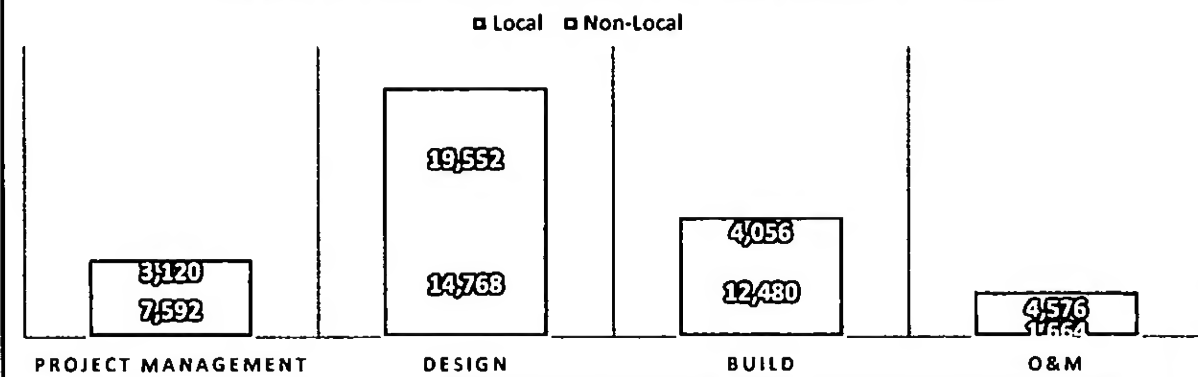
## LOCAL TEAM

Wichita Water Partners (WWP) bring several key members representing Wichita offices. However, all of the critical water treatment process design would be completed in either Omaha or Kansas City (Figure 1). According to the résumés provided in its proposal, WWP plans to have almost half of the pre-construction project hours generated by staff located outside of Wichita (Figure 2). The Jacobs team also would have a substantial portion of its design work completed by non-local staff. During the costliest phase of the project – construction – at least 70% of the Jacobs work is planned to utilize local contractors (Figure 3).

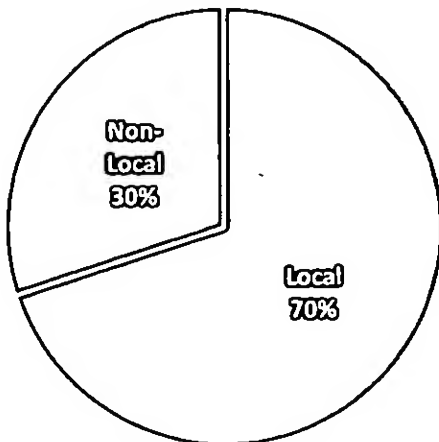
**FIGURE 1: WATER TREATMENT PROCESS DESIGN TEAM - WWP**

Name	Company	Role	Location
Eric Berggren	HDR	Team Lead	Omaha
Jason Schaefer	Burns & McDonnell	Conventional Treatment	Kansas City
Ryan Saffels	HDR	Softening	Kansas City
Steve Quail	HDR	Filtration	Omaha
Jose Labrador	HDR	Solids Handling	Omaha
Mike O'Connell	Burns & McDonnell	Storage & Pumping	Kansas City
Nathan Dunahee	Burns & McDonnell	Process Optimization	Kansas City

**FIGURE 2: PRE-CONSTRUCTION ANNUALIZED HOURS - WWP**



**FIGURE 3: LOCAL CONTRACTOR CONSTRUCTION CONTRIBUTION- JACOBS**



According to page 1-2 of its proposal, Jacobs plans to select local contractors via an open, competitive bid process. Jacobs claims that "this approach ensures that over 70% of total project construction can be competitively procured and delivered through the local market, when all equipment, materials, and subcontracts are included." The same construction companies on the WWP proposal would likely be awarded some of these bids under the Jacobs proposal.

**EXPERIENCE WITH LARGE TREATMENT PLANT PROJECTS**

The Jacobs team has significant experience designing, constructing, operating, and maintaining water treatment facilities. According to its proposal, the team is “#1 in overall design, #2 in water treatment, #3 in design-build, #29 in general contracting, and McCarthy [the construction sub-contractor] is #20 in general contracting based upon the most recent ENR [Engineering News-Record] ranking and Jacobs is the #1 United States based water and wastewater operator.” The WWP team – specifically Burns & McDonnell, HDR, and Alberici – also rank highly on ENR lists but do not have as extensive a history of similar projects.

Specific examples provided in each proposal are highlighted in the following table. Jacobs presented more experience with large water treatment plant projects than WWP.

<b>Wichita Water Partners</b>	<b>Jacobs</b>
<b>Aquifer Storage &amp; Recovery: Wichita, KS</b> 30 MGD – Design Build (2011)	<b>Twin Oaks Valley WTP: San Diego, CA</b> 100 MGD – Design Build Operate (2008)
<b>Platte West WTP: Omaha, NE</b> 100 MGD – Design Build (2008)	<b>Davis-Woodland WTP: Woodland, CA</b> 30 MGD – Design Build Operate (2016)
<b>Florence WTP Capital Improvements: Omaha, NE</b> 160 MGD – Design (Ongoing)	<b>Northeast WTP Expansion: Houston, TX</b> 320 MGD – Design Build (2022)
<b>Membrane WTP Expansion &amp; Impr.: Fargo, ND</b> Unknown Size and Delivery (2018)	<b>Prairie Waters Water Supply System: Aurora, CO</b> 50 MGD – Program Mgmt. & Design (2010)
<b>WTP Replacement: Thornton, CO</b> 20 MGD – Design Build (2020)	<b>Dublin Road WTP Expansion: Columbus, OH</b> 80 MGD – Design (2017)
<b>FJ Horgan WTP: Toronto, ON</b> 212 MGD – Design Bid Build (2012)	<b>FJ Horgan WTP: Toronto, ON</b> 212 MGD – Design Bid Build (2012)
<b>Water Transmission &amp; Distribution Lines: Wichita, KS</b> Pipelines Only, No MGD – Design (2018)	<b>Harry W. Tracy WTP: San Francisco, CA</b> 180 MGD – Design Bid Build (2007)
<b>Chemical Feed and Filter WTP Upgrades: Wichita, KS</b> No MGD Changes – Design Build (Ongoing)	<b>San Juan Chama WTP: Albuquerque, NM</b> 120 MGD – Design Bid Build (2008)
	<b>Lakeview WTP: Peel, ON</b> 157 MGD – Design Bid Build (2007)
	<b>Deer Valley WTP East Basins Reconst.: Phoenix, AZ</b> 150 MGD – Construction Mgr At Risk (2010)
	<b>North Texas WTP Ozonation: Dallas, TX</b> 770 MGD – Design Bid Build (2015)
	<b>Cedar Water Treatment Facility: Renton, WA</b> 180 MGD – Design Build Operate (2004)
	<b>David L. Tippin WTP: Tampa, FL</b> 120 MGD – Design Bid Build (2002)
	<b>Hefner WTP: Oklahoma City, OK</b> 150 MGD – Design Bid Build (2011)

**DEVELOPMENT OF GUARANTEED MAXIMUM PRICE (GMP)**

The relationship between cost uncertainty, construction risk, and the GMP was recognized and discussed by Jacobs. The Jacobs team would conduct a risk evaluation prior to developing a GMP, in order to find the optimum balance between risk and cost escalations. This is likely to result in a lower GMP with a reduced contingency. Without such an evaluation, the GMP would need to include a substantial contingency, which affects the rate increases needed to support the project.

# NORTHWEST WATER TREATMENT FACILITY

November 26, 2018

DBO Selection Summary

- The 5% evaluation weighting on cost was only on the first phase (getting to 30% design). Total project cost is an important consideration when evaluating whether to proceed with Phase 2 (construction). An investment in a quality, risk-based design can lower the GMP.
- A design contest approach in which both parties have \$6m Phase 1 contracts would delay the environmental clearance and reduce risk mitigation measures. This would lead to a less robust Phase 2 contract without a solid GMP. This could put the City at risk for unplanned spikes in materials costs.
- Jacobs has a Risk & Opportunity Management Tool to identify and mitigate risks in a way that minimizes the GMP
  - The tool uses a probabilistic analysis that links schedule and costs, resulting in strategies that eliminate, minimize, or offset risk impacts. Ultimate outcome is a stronger construction schedule range and minimized contingency amounts in the GMP.
- Jacobs is planning on bid packages to minimize construction costs while still netting about 70% participation from local contractors
  - This is consistent with findings from the reference check – Jacobs achieved 70% or higher local participation in treatment plant projects in Davis, CA; Spokane County, WA; Camp Pendleton, CA; and Leawood, KS (Tomahawk Creek wastewater plant)
- Jacobs plans to complete construction three months earlier than required
- Jacobs described in much greater detail plans for geotechnical investigation and steps to mitigate the public impacts of construction. This includes quantities and depths of expected boring samples for soil condition assessment as part of the design process. Construction mitigation measures have been identified to minimize the noise, air, and other impacts that could affect neighboring properties. Jacobs plans to open a construction complaint hotline for impacted residents to directly contact site managers when issues arise.
- Jacobs has a more detailed commissioning plan and identifies staff team to commission the plant prior to it becoming operational
  - Broadly, this includes “dry” and “wet” testing (with and without water) of individual components, subsystems, and systems, followed by the entire treatment facility
  - Example: Wichita Water Partners (WWP) was asked in its interview to explain how it would commission the disinfection system, as WWP plans a recirculation pipe to test assets prior to the plant being operational. The recirculation pipe would not touch the disinfection system, so WWP was asked how the system would be commissioned. They did not have an answer, other than stating that they would learn things along the way.

Jacobs has discussed in negotiations how they could use one of the four underground reservoirs at Hess Pump Station to commission disinfection at the end of the new pipeline (not just at the

plant site), ensuring that we meet the same water quality parameters at the same point in the system as we do today. Without proper disinfection, there could be numerous problems with dangerous byproducts in the potable water and corrosion control.

- Jacobs has identified seven construction sequence packages to flatten labor needs, instead of costlier and risky spikes in labor
- Jacobs has significantly more experience with DB and DBo delivery of similar projects
  - At least nine water treatment projects at least as big as the NWWTF; in total, Jacobs identified more than 20 plant projects exceeding 100 MGD and/or \$100 million
  - WWP identified only three such projects and not with the full DBO delivery
- Jacobs identified themselves as the operator of the NWWTF for its first two years. WWP could only identify one of two firms that would potentially be the operator (Veolia and InfraMark)
  - The City previously heard community concerns about proceeding with Veolia prior to moving forward with Phase 1 of the Utilities Optimization Program. Veolia has had high visibility challenges due to its operation of the Flint water system and recent litigation in Pittsburgh related to elevated lead levels after it took over water operations
- As Jacobs has the O&M team involved at the beginning of the project, there is a greater certainty of the design reflecting operating needs and lifecycle cost efficiencies.
- The Jacobs O&M model includes a “flight simulator” training approach to simulate real-world O&M activities prior to transitioning to City staff.
- The Jacobs team spoke about O&M staffing opportunities and how they could hire staff that could eventually transition to City vacancies. This may provide a chance to direct-hire some of the treatment plant expertise that will be responsible for operating the NWWTF for the first two years.
- Jacobs team had identified separation between design and design QA/QC, ensuring that the same people who design the assets are not also checking for quality
  - The WWP team had an overlap of individuals involved in design and QA/QC
- WWP cited the ASR project as one of its best examples of demonstrated experience. There have been a number of challenges that staff previously settled through a negotiation with Burns & McDonnell and Alberici (the two parties forming the joint venture known as Wichita Water Partners) to ensure operability of the ASR assets.
  - Poor project management is the primary reason for the ASR challenges. Staff are trying a different approach to ensure such challenges are not created with the NWWTF. This includes a progressive DBo delivery managed by an Owners Representative, with a risk-based approach deployed from the beginning of Phase 1. A design contest is a different approach that may create more risk of outcomes similar to what was delivered with ASR.